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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,377	06/26/2001	Linda Ann Riedle	RPS9-2001-0024US1/2067P	2902

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EXAMINER	
INOA, MIDYS	

ART UNIT	PAPER NUMBER
2188	16

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/892,377	Applicant(s) RIEDLE ET AL.
	Examiner Midys Inoa	Art Unit 2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (5,542,064) in view of Microsoft Computer Dictionary and further in view of Applicant's admitted Prior Art.

Regarding Claims 1, 3, 5, 11, 13, 15, 20 and 22, Tanaka et al. teaches a data storage system with a plurality of storage devices (disk drives 16-1 to 16-n, Figure 1) in which CPU 1 is the main module of which controller 2 is a child, controller 2 is a module of which the plurality of disk processors 17-1 to 17-n are children, and the plurality of disk processors are independent modules each having a disk drive 16-1 to 16-n as a child (Figure 1). Tanaka discloses controller 2 receiving input and output command from CPU 1 and passing such commands from the controller 2 to the corresponding drive processor 17-1 to 17-n and then to the corresponding disk drive ("deciding which child to pass the input command to... passing the input command to the decided child", Column 3, line 50 to Column 4, line 35). In this system, the source is transparent to the drive processor module in that this module does not communicate with the CPU, but

instead communicated directly with a module above it, controller 2. Tanaka does not teach each module comprising programming code for implementing a RAID storage system. Microsoft Computer Dictionary discloses a RAID storage system (Page 372). It would have been obvious to one of ordinary skill in the art at the time the invention was made to transform the system of Tanaka et al. to include a RAID storage system since a RAID system provides high performance, storage efficiency, high speeds, reliability and low cost. **Although Tanaka et al. discloses "no consideration of the input/output command waiting state of each disk drive at the time of reading/writing of data" as a disadvantage of a RAID system (Column 2, lines 14-20), the many advantages of using a RAID system might be a tradeoff valuable enough to still use this system despite its small disadvantage.** Tanaka in view of Microsoft Computer Dictionary does not teach encapsulated modules where inputs and outputs are not fixed and modules can be mixed and matched to form different RAID configurations. Applicants Admitted Prior Art discloses an encapsulated RAID system (Figure 2B) where RAID 5 modules are encapsulated within a RAID 0 module. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt the encapsulation of the admitted prior art to the system of Tanaka in view of Microsoft Computer Dictionary since such encapsulation isolates modules within modules thus creating more manageable sub-systems within the main system.

Regarding Claims 2, 12, and 21, in Tanaka et al.'s storage system, CPU 1 can be considered the main module.

Regarding Claims 4, 14, and 23, in Tanaka et al.'s storage system, CPU 1; which acts as a client computer to the storage system comprised of controller 2, the plurality of drive processors,

and the plurality of disk drives; is the source of the input commands being sent from module to module, finally reaching a disk drive child (see Figure 1).

Regarding Claims 6-7, 16-17, and 25, Tanaka et al. teaches drive processors to control access to the disk drives and to control the processing of commands by the disk drives. Once the input command reaches the corresponding drive processor, the command is processed and executed by the disk drive in a way common to most groups of disk drives and controllers (wherein a group is composed of a disk drive and a corresponding controller, Column 4, lines 25-33).

Regarding Claims 8 and 24, Tanaka et al. teaches that an input command is received by the first module, controller 2, and passed on until it reaches the final child, which is the corresponding disk drive. It is understood that a disk drive is a physical storage device (Column 3, line 50 – Column 4, line 35, Figure 1).

Regarding Claims 10 and 19, Tanaka et al. teaches controller 2 sending an answer to the CPU 1 by means of the Microprocessor 11-1 indicating that the command that it has sent is not acceptable ("status message"). This message is being sent from the controller 2, which is a child of the CPU 1 ("module parent... host", Column 4, lines 1-3).

Regarding Claim 26, Tanaka et al. teaches a plurality of drive processors ("control chips"), which enable the access of data from the disk drives, coupled to controller 2 and to a corresponding disk drive ("storage device"). The drive processors aid in the processing of input commands in the disk drive and control the access to the disk drive (Column 4, lines 25-34).

Regarding Claims 9, 18 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (5,542,064). Tanaka et al. teaches the invention as set forth by claims 1-8

above. Tanaka et al. does not teach building commands using a small computer system interface (SCSI). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the commands of Tanaka's invention SCSI commands since such upgrade would allow for the connection of peripheral devices (such as modules) while taking up a minimal amount of connection slots (for further information refer to the definition of "small computer systems interface" in The Authoritative Dictionary of IEEE Standards Terms).

Response to Arguments

4. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Applicants Admitted Prior Art discloses an encapsulated RAID system (Figure 2B) where RAID 5 modules are encapsulated within a RAID 0 module.

5. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, **although Tanaka et al. discloses "no consideration of the input/output command waiting state of each disk drive at the time of reading/writing of data" as a disadvantage of a RAID system (Column 2, lines 14-20), the many advantages of using a RAID system might be a tradeoff valuable enough to still use this system despite its small disadvantage.**

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Inoa whose telephone number is (703) 305-7850. The examiner can normally be reached on M-F 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Midys Inoa

Midys Inoa
Examiner
Art Unit 2188

MI

Mano Padmanabhan 5/8/04

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER